

### Amendments to the Claims:

*This listing of claims will replace all prior versions, and listings, of claims in the application:*

1. (currently amended) A method for analyzing waviness of a surface, the method comprising:

measuring a height of the surface over a predetermined distance with a surface profiling instrument;

processing data gathered with the surface profiling instrument to produce a set of data points indicative of a waviness profile;

selecting a subset of the set of data points;

determining a peak value and a valley value of the subset;

calculating a waviness height of the subset based on the peak and valley values;

repeating the selecting, determining, and calculating steps for additional subsets until all members of the set of data points have been selected; and

selecting a maximum waviness height value from the waviness heights calculated for each subset;

wherein each subset includes a predetermined number of consecutive data points.

2. (original) The method of claim 1 wherein the surface profiling instrument is a profilometer.

3. (original) The method of claim 1 further comprising comparing the maximum waviness height value to a threshold value and generating an acceptance signal if the maximum waviness height value is less than the threshold value.

4. (original) The method of claim 1 further comprising comparing the maximum waviness height value to a threshold value and generating a reject signal if the maximum waviness height value is greater than the threshold value.

5. (original) The method of claim 1 wherein each subset includes at least one data point included in a previous subset.

6. (original) The method of claim 1 wherein each subset includes at least one data point not included in a previous subset.

7. (cancelled)

8. (original) The method of claim 1 wherein the predetermined distance is at least two times greater than a specified number of cutoffs over which waviness assessment is conducted.

9. (original) A method for analyzing waviness of a machined surface, the method comprising:

obtaining a data set having a plurality of sequential data points indicative of a waviness profile of the machined surface;

establishing a size of a data processing window representing a predetermined number of sequential data points;

positioning the data processing window to include a first data point in the data set;

selecting a subset of the data set;

determining a peak value and a valley value of the subset;

calculating a peak-to-valley waviness height based on the difference between the peak and valley values;

indexing the data processing window to select another subset having at least one different member than a previous subset;

repeating the selecting, determining, calculating, and indexing steps until each data point in the data set has been selected at least once.

10. (original) The method of claim 9 wherein the data processing window is indexed by one data point each iteration such that a first sequential data point in the subset is removed from the subset and the next data point in sequence in the data set is added to the subset.

11. (original) The method of claim 9 wherein the data processing window is indexed by more than one data point each iteration.

12. (currently amended) The method of claim 9 wherein a size of the data processing window ~~size~~ is five times greater than a cutoff length representative of a spacial frequency.

13. (original) A method for analyzing waviness of a surface, the method comprising:

measuring a height of the surface with a surface profiling instrument to obtain data over a predetermined distance;

fitting a regression line to the data;

subtracting the regression line from the data over the predetermined distance;

filtering the data to determine a waviness profile having a set of data points;

selecting a subset of the set of data points that includes a predetermined number of consecutive data points;

determining a peak value and a valley value of the subset;

calculating a peak-to-valley height of the subset based on a difference between the peak and valley values;

repeating the selecting, determining, and calculating steps for additional subsets until all data points have been selected at least once;

selecting a maximum waviness height value from the peak-to-valley heights calculated for each subset;

comparing the maximum height waviness value to a threshold value indicative of a localized waviness region; and

rejecting the part if the maximum waviness height value exceeds the threshold value.

14. (original) The method of claim 13 further comprising the step of accepting the part if the maximum waviness height value does not exceed the threshold value.

15. (original) The method of claim 13 wherein the surface is adapted to mate to a gasket.

16. (original) The method of claim 15 wherein the surface is disposed on an engine block.

17. (original) The method of claim 15 wherein the surface is disposed on cylinder head.

18. (original) The method of claim 13 wherein the surface is a portion of a transmission component.

19. (original) The method of claim 13 wherein each subset includes the same number of data points.

20. (original) The method of claim 13 wherein a first data point in the first subset and a last data point in the last subset are not members of any other subset.

21. (original) The method of claim 13 wherein the predetermined distance is greater than 35mm.